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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

MEMC ELECTRONIC MATERIALS, INC.,

No. C 01-4925 SBA
(Related to Case No. C 05-2133)

Plaintiff,

v.

ORDER

MITSUBISHI MATERIALS SILICON
CORPORATION, et al.,

[Docket No. 502]

Defendants.

This matter comes before the Court on Defendants' Motion to Exclude the Expert Report and Testimony of Plaintiff's Proposed Expert Luciano Mule'stagno. Having read and considered the arguments presented by the parties in the papers submitted to the Court, the Court finds this matter appropriate for resolution without a hearing. The Court hereby GRANTS Defendants' Motion to Exclude the Expert Report and Testimony of Plaintiff's Proposed Expert Luciano Mule'stagno [Docket No. 502].

BACKGROUND

In this patent infringement suit, Plaintiff MEMC Electronics Materials, Inc. ("MEMC") has accused Defendants Mitsubishi Materials Silicon Corp., Mitsubishi Silicon America Corp., Sumitomo Mitsubishi Silicon Corp., SUMCO USA Corp. and SUMCO USA SALES Corp. (collectively, "SUMCO") of actively inducing the infringement of U.S. Patent No. 5,919,302 (the "302 Patent"). The '302 Patent was issued on July 6, 1999 and claims an invention related to the manufacture of silicon crystals for use in pure silicon wafers.

The asserted claims from the '302 Patent, claims 1-6 and 9-12, are directed to a silicon wafer that

1 contains a "first axially symmetric region in which vacancies are the predominant intrinsic point defect
2 and which is substantially free of agglomerated vacancy intrinsic point defects wherein the first axially
3 symmetric region comprises the central axis or has a width of at least about 15 mm."¹ The claims also
4 require a "second axially symmetric region in which silicon self-interstitial atoms are the predominant
5 intrinsic point defect and which is substantially free of agglomerated silicon self-interstitial intrinsic
6 point defects."

7 On May 1, 2003, the Court held a claim construction hearing for the purpose of construing the
8 claims of the '302 Patent. On October 17, 2003, MEMC served SUMCO with the expert report of
9 Luciano Mule'Stagno (the "Expert Report"). The Expert Report consisted of the results of testing
10 Mule'Stagno performed on silicon wafers produced during discovery by SUMCO. It comprised seven
11 pages of narrative opinion and almost 500 pages of materials relating to testing methodology and results.
12 Based upon the testing performed and described in the Expert Report, Mule'Stagno concluded that
13 SUMCO's silicon wafers infringe the '302 Patent and U.S. Patent No. 6,287,380 (the "'380 Patent")
14 literally and under the doctrine of equivalents. Up until the disclosure of the Expert Report, MEMC had
15 not alleged infringement of the '380 Patent.

16 On December 8, 2003, SUMCO filed a Motion to Exclude the Expert Report and Testimony of
17 Plaintiff's Proposed Expert Luciano Mule'Stagno and to Preclude Plaintiff's Infringement Claims
18 ("SUMCO's First Motion to Exclude Expert").

19 On March 1, 2004, the Court issued an Order granting SUMCO's First Motion to Exclude
20 Expert. The Court granted SUMCO's motion to exclude Mule'Stagno's Expert Report and testimony
21 to the extent that it related to infringement of the '380 Patent. The Court also granted SUMCO's motion
22 to preclude MEMC from pursuing its claim of infringement under the doctrine of equivalents and
23 SUMCO's motion to bar MEMC from offering any expert report or testimony that SUMCO has
24 infringed the '302 Patent under the doctrine of equivalents. Additionally, the Court granted SUMCO's
25 motion to strike the "claim charts" in Mule'Stagno's Expert Report but denied SUMCO's motion to

27 ¹ Per the Court's *Markman* ruling, "substantially free of agglomerated vacancy intrinsic point
28 defects" means "a concentration of such agglomerated defects which is less than the detection limit
of these defects, which is currently about 1000 defects/cm³."

1 preclude MEMC's infringement claims.

2 With respect to Mule'Stagno's Expert Report as it pertained to the '302 Patent, the Court noted
3 several deficiencies that rendered the testimony inadmissible pursuant to Rule 702. Specifically, the
4 Court found that:

5 The Report merely identified the tests that Mr. Mule'Stagno used to test the
6 wafers but does not explain in detail the methodology he used to test the
7 wafers. For example, the Report states that '[t]he Light Point Defect Scans
8 performed at sizes greater than 0.12 μ m clearly show lots of counts in a region
9 extending from the center to about 10mm from the wafer edge Looking at
10 these LPD maps, it is clear we are looking at wafers which have a large area
11 covered by COPs which manifest themselves as LPDs in this test.' MEMC's
12 Opp. App. A at ii. It is not evident from this statement how the Light Point
13 Defect Scans are performed, what such scans purport to show and how the
14 results are relevant to Mule'Stagno's conclusions.

15 March 1, 2004 Order at 11. Additionally, the Court noted that:

16 The Report also does not demonstrate that the research and analysis supporting
17 the proffered conclusions have been subjected to normal scientific scrutiny
18 through peer review and publication or identify an objective source
19 demonstrating that the methods and premises that he used were generally
20 accepted by or espoused by a recognized minority of scientists in his field. *See Lust by & Through Lust v. Merrell Dow Pharmas.*, 89 F.3d 594, 597 (9th Cir.
21 1996). Mr. Mule'Stagno has submitted a declaration in connection with
22 MEMC's Opposition that states that the test that he used, the bulk microdefect
23 density test ('BMD test'), has been used throughout the silicon industry for 15
24 years to test silicon. Mathiowetz Decl. Exh. F ¶ 5. Furthermore, Mr.
25 Mule'Stagno states that "it is routine practice in the industry to test a single strip
26 of silicon (where the strip starts at the center of the wafer and ends at the outer
27 edge)' in order to characterize the entire wafer. *Id.* But nowhere in his
28 declaration does he point to an *objective* source, such as a learned treatise, the
29 policy statement of a professional association, a published article in a reputable
30 scientific journal or the like, demonstrating that his methods and premises were
31 generally accepted by or espoused by a recognized minority of scientists in his
32 field. *Daubert II*, 43 F.3d at 1319. Without objective verification that any of
33 Mr. Mule'Stagno's methods were reliable, the Court cannot find that the
34 proffered evidence is both relevant and reliable as required by *Daubert*.

35 *Id.*

36 Pursuant to Federal Rule of Civil Procedure 26(a)(2)(C) and (e)(1), MEMC was given an
37 opportunity to cure the defects in Mule'Stagno's Expert Report by providing objective verification of
38 Mule'Stagno's methodology. In particular, MEMC was directed to show, via objective sources, what
39 Mule'Stagno's tests were, what the results purported to show, and how the results were relevant to the
40 conclusions. MEMC was also instructed to demonstrate, via objective sources, that Mule'Stagno's
41 methodologies were generally accepted by or espoused by a recognized minority of scientists in the

1 field.

2 In response to the Court's Order, on March 9, 2004, MEMC served SUMCO with the Second
3 Declaration of Mule'Stagno. *See* Powers Decl. ISO Second Mot. to Exclude Expert ("Powers Decl.")
4 at Ex. 3. However, on March 16, 2004, before SUMCO had a chance to respond to the Second
5 Declaration of Mule'Stagno, this Court granted SUMCO's Motion for Summary Judgment of Zero
6 Damages and specifically found that SUMCO was not liable for either direct infringement or
7 inducement of infringement. Accordingly, on April 22, 2004, the court entered a Judgment of
8 Non-infringement. MEMC subsequently appealed.

9 On August 22, 2005, the Federal Circuit issued its decision on the appeal and held that this Court
10 did not err when it granted summary judgment on the issue of direct infringement. However, the Federal
11 Circuit held that the Court did err when it granted summary judgment with respect to inducement of
12 infringement because it found that there were genuine issues of material fact with respect to whether
13 SUMCO induced infringement of the '302 Patent on the part of Samsung Austin. Accordingly, the
14 Federal Circuit remanded the case to this Court for further proceedings.

15 On November 4, 2005, SUMCO filed the instant Motion to Exclude the Expert Report and
16 Testimony of Plaintiff's Proposed Expert Luciano Mule'stagno ("Second Motion to Exclude Expert").

17 **LEGAL STANDARD**

18 Expert testimony is admissible pursuant to the Federal Rules of Evidence, primarily Rule 702.
19 *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589 (1993). Under *Daubert*, the district court acts
20 as a "gatekeeper," excluding "junk science" that does not meet the standards of reliability required under
21 Rule 702. *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 142 (1997); *Kennedy v. Collagen Corp.*, 161 F.3d
22 1226, 1229-30 (9th Cir. 1998). The trial court accomplishes this goal through a preliminary
23 determination that the proffered evidence is both relevant and reliable. *Daubert*, 509 U.S. at 589-95.

24 Scientific evidence is deemed reliable if the principles and methodology used by the expert
25 proffering it are grounded in the methods of science. *Id.* at 592-95. In *Daubert*, the Supreme Court gave
26 a non-exhaustive list of factors for determining whether scientific testimony is sufficiently reliable to
27 be admitted into evidence, including: (1) whether the scientific theory or technique can be (and has
28 been) tested; (2) whether the theory or technique has been subjected to peer review and publication; (3)

1 whether there is a known or potential error rate; and (4) whether the theory or technique is generally
2 accepted in the relevant scientific community. *Id.* at 593-94.

3 The Ninth Circuit has explained that if an expert did not conduct his or her own research,
4 independent of the litigation, on the subject of the testimony, the district court must determine whether
5 there exists any "objective, verifiable evidence that the testimony is based on 'scientifically valid
6 principles.'" *Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1317-18 (9th Cir. 1995) ("*Daubert
II*"). An expert may demonstrate the scientific validity of a theory or technique by showing that "the
7 research and analysis supporting the proffered conclusions have been subjected to normal scientific
8 scrutiny through peer review and publication." *Id.* at 1318. Alternatively, testifying experts may also
9 show the validity of their theory by explaining "precisely how [the experts] went about reaching their
10 conclusions and pointing to some objective source – a learned treatise, the policy statement of a
11 professional association, a published article in a reputable scientific journal or the like – to show that
12 they have followed the scientific method, as it is practiced by (at least) a recognized minority of
13 scientists in their field." *Id.* at 1319.

14 The proponent of the expert testimony bears the burden of establishing the testimony's
15 admissibility by a preponderance of the evidence. *Butler v. Home Depot, Inc.*, 984 F.Supp. 1257, 1260
16 (N.D. Cal. 1997). The Court's gatekeeper role under *Daubert* requires the Court to make a "preliminary
17 assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and
18 of whether that reasoning or methodology properly can be applied to the facts in issue." *Daubert*, 509
19 U.S. at 592-93.

20 **ANALYSIS**

21 In its Second Motion to Exclude Expert, SUMCO argues that the Second Declaration and Sixth
22 Declaration of Mule'Stagno do not comply with the Court's March 1, 2004 Order and should therefore
23 be excluded in their entirety. Specifically, SUMCO argues that MEMC has not effectively shown that
24 Mule'Stagno has used scientifically reliable and recognized industry tests to establish whether the
25 accused wafers have an "axially symmetric region," or whether "vacancies are the predominant intrinsic
26 point defect," or whether the wafers have a region that is "substantially free of agglomerated vacancy
27 intrinsic point defects" as defined by this Court.
28

1 The first flaw that SUMCO identifies in Mule'Stagno's Second Declaration is the fact that
2 Mule'Stagno has not identified a single test that meets the *Daubert* standard of reliability and that
3 supports his conclusion that the accused wafers contain the claim limitation of an axially symmetric
4 region. As SUMCO points out, MEMC has the burden of proving that SUMCO's wafers, which are
5 formed from a different process than prior art wafers, are axially symmetric. Instead of proving axial
6 symmetry, Mule'Stagno asks the Court to *assume* that the accused wafers are axially symmetric based
7 solely upon what he contends are similar "assumptions" made in prior art literature.² However, not only
8 do these articles concern wafers formed by a different process, but Mule'Stagno's own subjective
9 "summary" of the articles is not sufficient to meet the standard set forth in the Court's March 1, 2004
10 Order.

11 Similarly defective is Mule'Stagno's Sixth Declaration, in which he refers to two papers co-
12 authored by Park and two SUMCO employees, Furuya and Harada. Although Mule'Stagno claims that
13 these articles corroborate his view that all Czochralski wafers are axially symmetric, critically, his
14 analysis fails to distinguish between silicon grown by prior art methods and silicon grown under the
15 Park/Samsung method. Further, Mule'Stagno's summary of the articles is misleading. For example,
16 while Mule'Stagno states that "[f]rom Figure 5, the authors identify an axially symmetric outer region
17 of the silicon 20 mm wide," the term "axial symmetry" is, in fact, completely absent from the articles.
18 As stated by the Ninth Circuit in *Domingo v. T.K.*, 289 F.3d 600 (9th Cir. 2002), "[n]othing in either
19 *Daubert* or the Federal Rules of Evidence requires the district court to admit opinion evidence that is
20 connected to existing data only by the *ipse dixit* of the expert." *Id.* at 607. As such, Mule'Stagno's bare
21 assertion that axial symmetry is regularly "assumed" and does not need to be proven is insufficient to
22 defeat SUMCO's Second Motion to Exclude Expert.

23 The second flaw that SUMCO identifies in Mule'Stagno's declarations is the fact that he has not
24 provided objective verification that it is scientifically valid to prove axial symmetry by testing only a

25 ²For example, Mule'Stagno asserts that Shimura's discussion of striations in wafers
26 "demonstrates his appreciation and acceptance of the axial symmetry of Czochralski silicon." *See*
27 Powers Decl. at Ex. 3. Mule'Stagno also asserts that Zimmerman's Figure 1 "reflects an
28 understanding that one-half or even one-quarter of a wafer may be tested," and that in Voronkov's
work "[i]mplied is the fact that these regions would have appeared the same regardless of the precise
position of the longitudinal cut." *Id.*

1 sliver of the accused wafer. This Court previously expressed concern regarding Mule'Stagno's opinion
2 that "it is routine practice in the industry to test a single strip of silicon . . . to characterize the entire
3 wafer." Mule'Stagno has done nothing to cure this deficiency other than to supplement his Expert
4 Report with more conclusory opinions and diagrams.

5 Further, as SUMCO points out, although Mule'Stagno has supplemented his Expert Report with
6 references to several secondary sources, he still has not achieved what the Court has asked him to do.
7 For example, Mule'Stagno has not shown that the method upon which he primarily relies, Bulk
8 Microdefect Density (BMD) testing, is generally accepted by or espoused by a recognized minority of
9 scientists in his field as a reliable test to prove what Mule'Stagno is attempting to prove. In fact,
10 although Mule'Stagno refers to articles by Obermeier, Lee, and Sasaki, his references are so vague that
11 they provide no basis for the Court to conclude: (1) that the method used by the authors is practiced by
12 a recognized minority of scientists in their field; or (2) that he has followed the same methodology in
13 his own testing. In fact, SUMCO makes clear that Mule'Stagno has *not* followed Obermeier's
14 methodology. *See* Mot. at 9 (noting that Mule'Stagno used a different temperature for his first heat
15 treatment than Obermeier, used a longer second heat cycle than Obermeier, and used a different etchant
16 than Obermeier). Further, as SUMCO also points out, Mule'Stagno tested slivers of the accused wafers
17 rather than the whole wafers that were tested by Obermeier, Lee and Sasaki, and provides no support
18 or justification for this methodological difference. Additionally, Mule'Stagno's assertion that BMD
19 testing is reliable is significantly undermined by the fact that he admits, in his Sixth Declaration, that
20 the BMD testing he performed yielded inconsistent results when performed by different operators at
21 different times. *See* Mathiowetz Decl. at Ex. 14 at p. 6.

22 Mule'Stagno's descriptions of the other tests he has performed are similarly defective. For
23 example, to support his Light Point Defect (LPD) and Atomic Force Microscopy (AFM) testing,
24 Mule'Stagno's Second Declaration cites one article by Fujise as evidence of objective verification, but
25 does not offer any evidence that the Fujise article or method is generally accepted by or espoused by
26 a recognized minority of scientists in the field. And again, even if the Court had a basis to conclude that
27 the Fujise protocol is generally accepted, it appears that Mule'Stagno did not follow that protocol. *See*
28 Mot. at 7, 18 (noting that Fujise and Mule'Stagno used different instruments to perform the test). In

1 addition, although Mule'Stagno states that "AFM can distinguish between pits in the [wafer] surface
2 caused by polishing from pits in the surface caused by an agglomerated defect," the Fujise article does
3 not discuss measuring agglomerated COP defects at all, and therefore does not support this conclusion.

4 Similarly, in support of his Flow Pattern Defects (FPD) testing, Mule'Stagno's Second
5 Declaration cites an article by Yamagishi and three other articles that have cited to Yamagishi, but does
6 not offer any evidence that the Yamagishi article or method is generally accepted by or espoused by a
7 recognized minority of scientists in the field as a recognized test for revealing and identifying
8 agglomerated vacancy point defects in silicon materials within the detection limit required by the '302
9 Patent. Moreover, there does not appear to be any support in the Yamagishi article or the other sources
10 for Mule'Stagno's conclusion that the flow pattern activity he identifies in the accused wafers is due to
11 "contamination" or "damage" rather than the presence of agglomerated vacancy defects. Further, the
12 Yamagishi article and the other sources do not provide objective support for Mule'Stagno's methodology
13 of scanning only one quarter wafer for regions of agglomerated defects. Similarly, in his discussion of
14 Copper Decoration testing, Mule'Stagno cites articles by Kulkarni and Yamauchi, but does not aver that
15 the protocols in the Kulkarni and Yamauchi articles are generally accepted by or espoused by a
16 recognized minority of scientists in the field for visually detecting the presence of agglomerated intrinsic
17 point defects.

18 Additionally, the Court does not have sufficient evidence upon which it can conclude that
19 Mule'Stagno's Oxygen Induced Stacking Fault (OISF) testing is scientifically reliable. Although
20 Mule'Stagno's Second Declaration cites articles by Harada and Dornberger, Mule'Stagno does not appear
21 to have followed the methodologies employed by either Harada or Dornberger. Instead, it appears that
22 he has mixed the two methods and has failed to provide any explanation as to why it was objectively
23 valid to do so. Further, with respect to the Lifetime testing Mule'Stagno performed, Mule'Stagno's
24 conclusory statements are so vague as to render the entire discussion of this methodology virtually
25 meaningless. Indeed, in describing the relevancy of the test results, Mule'Stagno states only that "[t]he
26 low oxygen levels contained in the accused wafers rendered these test result *[sic]* less meaningful.
27 While they are consistent with the conclusions I reached in my report, I did not rely on the lifetime test
28 results to support those conclusions." Powers Decl. at Ex. 3 at p. 7. Based on this ambiguous remark,

1 the Court has no basis to determine whether Lifetime testing is scientifically valid. Indeed,
 2 Mule'Stagno's quick dismissal of Lifetime testing appears to lead credence to SUMCO's suggestion that
 3 Lifetime testing does *not* support Mule'Stagno's ultimate conclusion.

4 Quite tellingly, MEMC's Opposition brief fails to respond to the vast majority of defects
 5 SUMCO identifies in its Motion, discounting them as "insignificant" because SUMCO fails to "show
 6 how any of these differences would in any way change the outcome of any of Dr. Mule'Stagno's tests."³
 7 However, as MEMC concedes, since MEMC is the proponent of the expert testimony, it is MEMC –
 8 and not SUMCO – who bears the burden of establishing the expert's admissibility. *Butler*, 984 F.Supp.
 9 at 1260. MEMC has utterly failed to meet this burden. Accordingly, the Court GRANTS SUMCO's
 10 Second Motion to Exclude Expert.

11 **CONCLUSION**

12 IT IS HEREBY ORDERED THAT Defendants' Motion to Exclude the Expert Report and
 13 Testimony of Plaintiff's Proposed Expert Luciano Mule'stagno [Docket No. 502] is GRANTED.

14 IT IS SO ORDERED.

15 Dated: 2/24/06


 16 SAUNDRA BROWN ARMSTRONG
 17 United States District Judge

21 ³MEMC also chooses to rehash arguments raised during claim construction and to debate, at
 22 length, whether SUMCO's definition of the term "axially symmetric" is proper. This argument is
 23 entirely irrelevant to the instant Motion, which focuses only on whether MEMC has sufficiently
 24 proven that Mule'Stagno's expert testimony is scientifically reliable and admissible under *Daubert*.
 25 Additionally, MEMC's attempt to rely on a previously undisclosed "expert," Dr. Werner Bergholz
 26 ("Bergholz"), is improper. Bergholz's declaration does not constitute the type of "objective source,
 27 such as a learned treatise, the policy statement of a professional association, a published article in a
 28 reputable scientific journal or the like" which this Court's Order required, and his testimony does not
 cite to any objective authoritative source of the type required by the Order. In addition, Bergholz
 does not describe any personal knowledge about the accused products or patent claim limitations, or
 explain why his experience with prior art silicon wafers applies to wafers produced by the
 Park/Samsung method. Further, it appears that Bergholz did not review or confirm the validity of
 Mule'Stagno's testing procedures of the accused wafers, or the resulting data, or the quality or
 accuracy of the conclusions reached by Mule'Stagno. Accordingly, Bergholz's testimony has been
 disregarded by the Court.